

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
31 March 2005 (31.03.2005)

PCT

(10) International Publication Number  
**WO 2005/028370 A1**

(51) International Patent Classification<sup>7</sup>: C01G 33/00

FERREIRA, João, Batista, Neto [BR/BR]; Rua Fernão  
Dias, 264, Apto. 21, 05427-000 São Paulo - SP (BR).

(21) International Application Number:  
PCT/BR2004/000003

(74) Agent: MOMSEN, LEONARDOS & CIA.; Rua Teófilo  
Otoni 63, 10th floor, 20090-080 Rio de Janeiro - RJ (BR).

(22) International Filing Date: 23 January 2004 (23.01.2004)

(81) Designated States (*unless otherwise indicated, for every  
kind of national protection available*): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
PI 0304252-9 25 September 2003 (25.09.2003) BR

(71) Applicants (*for all designated States except US*):  
COMPANHIA BRASILEIRA DE METALURGIA E  
MINERACÃO [BR/BR]; Rua Pequetita, 111, 04552-902  
São Paulo-SP (BR). IPT-INSTITUTO DE PESQUISAS  
TECNOLÓGICAS DO ESTADO DE SÃO PAULO  
S/A [BR/BR]; Cidade Universitária "Armando de Salles  
Oliveira", 05508-901 São Paulo-SP (BR).

(84) Designated States (*unless otherwise indicated, for every  
kind of regional protection available*): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), Euro-  
pean (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR,  
GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK,  
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,  
ML, MR, NE, SN, TD, TG).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): TAGUSAGAWA,  
Solon, Yasuhiko [BR/BR]; Rua Engenheiro Afonso Bauer,  
104, 05616-080 São Paulo - SP (BR). ONO, Alberto,  
Akikazu [BR/BR]; Rua das Avencas, 120, 38182-194  
Araxá - MG (BR). BENEDUCE, Flávio, Neto [BR/BR];  
Rua Porto Rico, 95, 01436-100 São Paulo - SP (BR).

Published:

— with international search report

*For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.*

(54) Title: A PROCESS FOR THE PRODUCTION OF NIOBIUM OXIDE POWER FOR USE IN CAPACITORS

(57) Abstract: The present invention is related to a process for the production of a powder of niobium monoxide (NbO) having a high purity, large specific surface area, controlled oxygen and nitrogen contents and a morphology adequate for use in the manufacture of capacitors, characterized by comprising two niobium pentoxide (Nb<sub>2</sub>O<sub>5</sub>) reduction steps, the first step comprising reducing, by hydrogen, the niobium pentoxide (Nb<sub>2</sub>O<sub>5</sub>) to niobium dioxide (NbO<sub>2</sub>), and the second step comprising reducing niobium dioxide (NbO<sub>2</sub>) to niobium monoxide (NbO), by using an oxygen getter material in a convenient atmosphere which permits the transfer of the oxygen atoms from the niobium oxide (NbO<sub>2</sub>) to the getter material, under adequate conditions of time and temperature to form the niobium monoxide (NbO). The particles of powder of niobium monoxide (NbO) produced using the instant process are small, have a large surface area and an appropriate morphology, and are adequate for the production of capacitors.

WO 2005/028370 A1